DOCUMENT RESUME

ED 415 213 SP 037 722

AUTHOR Omoregie, Mike; Coleman, Betty
TITLE Technology Infusion: The Impact of Technology Infusion in Creating Quality Instructional Materials.
PUB DATE 1997-03-22
NOTE 12p.; Paper presented at the Annual National Conference on Creating the Quality School (6th, Oklahoma City, OK, March 20-22, 1997).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *Computer Uses in Education; *Educational Technology; Elementary Secondary Education; Higher Education; Preservice Teacher Education; Student Teachers; Student Teaching; *Technological Literacy; *Technology Education
IDENTIFIERS *Jackson State University MS; *Technology Integration

ABSTRACT

In 1996, teacher educators at the Jackson State University School of Education (Mississippi) implemented the Technology Infusion Project (TIP) for core academic subjects. The project consisted of a comprehensive multimedia computer training program to enlighten participating preservice teachers on how to deliver instruction in English, the arts, geography, and history by utilizing technological tools. Tools included networked multimedia computers, digital cameras, scanners, printers, video projectors, overhead projectors, compact disc recorders, television sets, and personal video conferencing systems. The project provided 2 weeks of technological training during the summer for 20 preservice teachers. After completing training, participants developed multimedia projects to represent their areas of specialty. Participants completed an evaluation instrument that examined whether they felt technology infusion played a significant role in (1) developing quality instructional materials, (2) students' academic performance, and (3) preservice teacher preparation. Data on school district students' academic performance were also analyzed. Results indicated that most participants believed technology infusion played a significant role in developing quality instructional materials and was important for preservice teacher education. The academic performance of preservice teachers and students increased by 75 percent in core academic subjects. (SM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 415 213

Technology Infusion: The Impact of Technology Infusion in Creating Quality Instructional Materials

Mike Omoregie, Ed.D. & Betty Coleman, Ed.D.
Jackson State University

Submitted to

The sixth annual National Conference on Creating the Quality School
Oklahoma City, Oklahoma
March 20-22, 1997

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

M. Omoregie

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

SP037722

Technology Infusion: The Impact of Technology Infusion in Creating Quality Instructional Materials

Mike Omoregie and Betty Coleman
Jackson State University

ABSTRACT

This paper describes the efforts of two teacher education professors infusing technology into classroom instruction. In the Summer of 1996, Mississippi Institutions of Higher Learning funded a proposal for the Jackson State University's School of Education to implement the Technology Infusion Project for core academic subjects (TIP). The Project investigators developed and operated a comprehensive multimedia computer training program to enlighten the participating teacher education preservice teachers on how to deliver instruction in English, the arts, geography and history by utilizing technological tools. The project provided technological training for twenty preservice teachers.

In response to the three research questions, (a) does technology infusion play a significant role in developing quality instructional materials? Based on the data gathered, 95% of the preservice teachers agreed that technology infusion plays a significant role in developing quality instructional materials for school aged students and adults. (b) does technology infusion play a significant role in the academic performance of students? Based on the analysis, the academic performance of preservice teachers and students increased by 75% in core academic subjects. (c) does technology infusion play a significant role in the preparation of preservice teachers? Based on the data analysis, 100% of the participants agreed that technology infusion plays a significant role in the preparation of preservice teachers.

In conclusion, the evaluation of the project showed that preservice teachers overwhelmingly support the infusion of technology in course curriculum. Research suggests that technology creates an environment for collaborative learning, increased academic performance, and enhanced motivation of learners. The TIP project also supports the aforementioned claim.

Introduction of Project Design

In the Summer of 1996, Mississippi Institutions of Higher Learning funded a proposal for the Jackson State University's School of Education to implement the Technology Infusion Project for core academic subjects. The Project staff developed and operated a comprehensive multimedia computer training program to enlighten the participating School of Education's teacher education preservice teachers on how to deliver instruction in English, the arts, geography, math, science, and history by utilizing technological tools. The Project goals and objectives were as followed: (1) to enhance preservice teachers with the knowledge of modern technologies that will enhance curricula in English, history, the arts, geography, math, and science at the K-12 level, and (2) to facilitate practical knowledge about technology infusion. The major objectives were to: (a) provide two weeks of intensive multimedia computer instruction to 20 selected preservice students during the 1996 summer semester, (b) provide 20 preservice teachers with knowledge on integrating modern technology in English, history, the arts, math, science, and geography curricula, (c) facilitate a structure for focused electronic discussions between the instructor and project participants, and (d) provide information on developing materials for English, history, the arts, math, science, and geography by using technological tools.

In order to serve twenty of the School of Education's preservice teachers in the twelve-month granting period, the School requested funds from Mississippi Institutions of Higher Learning. Throughout the Fall of 1996, the TIP project staff continuously monitored the participating preservice teachers during their practical teaching experience to ensure that technology was being integrated in their daily classroom activities. Finally, the participating preservice teachers were provided with E-mail addresses to communicate with the faculty at the

University while on practical field experience

Research on Technology

As we approach the 21st century, technology must become the driving force in the delivery of instruction to today's youth. Since the birth of microcomputers, the education community has recognized that redesign of teacher training is essential to the successful integration of technology in classroom instruction. While much has changed over the years, the need for teacher support and training has not. These components remain the key to successful implementation of technology in the classroom.

In schools across the nation, teachers continue to use calculators to average students' daily test grades, and they continue to create lesson plans and homework assignments for students through the use of freehand. With today's technological innovations, teachers should have skills that will enable them to use new innovations such as multimedia computers, digital cameras, scanners, in focus video projectors, in focus LCD panels, CD-recorders, video conferencing systems, and numerous software packages, i.e. Hyper studio, PowerPoint, Word Perfect, Netscape, and Microsoft works, to name a few. Many educators fear making massive investments in technological training. Their prior experiences with educational reform have led them to believe that the "new" revolution in computer use will pass in a few years like the so many other "new" revolutions in the past. As Decker Walker wrote:

> It is impossible to predict how long computers-in-education will hold the spotlight of public and professional attention. Five years would be an excellent run, 10 years would be the best since progressive education. What concerns me, however, is not the length of the run but what will remain in the schools when the boom has run its course and a new act has captured the spotlight. When that happens, the fate of computers-in-education will depend on the instructional uses to which teachers and students can put their computers (Walker, 1983, p. 244).

Still others fear that the emphasis on technology may overshadow important efforts to develop basics in math, reading, communication skills, and science. In reality, technology and the new

demands of the technological age should lead educators to redefine these cherished basics and the ways in which they are taught. A considerable body of research has already revealed that computer technology can enhance the learning skills of at-risk students by developing critical thinking and problem-solving skills, as well as, encouraging collaborative learning. Further, systems can be implemented to facilitate interaction among parents, teachers and students, an outcome already known to improve school performance (Poirot and Canales, 1993, Norris, 1994, Poirot and Robinson, 1994). Nevertheless, the collective fears expressed by too many educators may partially explain an observation made by Gwen Solomon of the US Department of Education "technology is everywhere but in the schools."

The reluctance of teachers to fully commit themselves to becoming technologically literate must be addressed. For the public schools, teacher involvement is the key aspect for successful technology infusion process. After all, it is the teacher who develops and implements the actual lesson plans for classroom instruction. As such, the advice of Abrams and Many (1997) seems particularly relevant

> Teachers who have not yet decided to adopt technology personally should continue to be exposed to the possibilities, gently encouraged, and offered support, but, their participation cannot be forced. More will result from supporting the willing than from cajoling the reluctant. To try to interest reluctant colleagues, inquire as to the areas of their teaching that cause them the most difficulty. Explore the potential for technological intervention. If there is an acknowledged problem, that teacher may be more willing to consider a new approach. If not, try again next year. (p.377)

On a broader scale, successful integration of technology in the delivery systems of public schools will require support from the district office in a number of areas. These areas include technology coordination, planning, integration, teacher involvement, staff development, hardware configuration, facilities and funding for successful implementation of technology infusion (Lockard, Abrams & Many, 1997). Successful coordination of technology literacy programs in

schools requires effective leadership to provide training seminars for classroom teachers and administrators. Teachers will also need access to resource persons in the district. Even with training needs and administrative support, teachers do not have the time to create individualized tools or make new technologies possible. Teachers may possess general ideas regarding these areas, but a specialist can help the teachers put their ideas into practice, either by creating software applications or by customizing existing technologies. Infusing technology in a school curriculum requires a carefully developed plan that includes a long-term view involving factors such a system-wide applications and major involvement of teachers/administrators (Lockard, Abrams & Many, 1997). One can not overlook the importance of articulation across grade levels because each teacher needs to know what students have previously learned to effectively plan for his/her own grade level. Finally, on-going staff development, appropriate hardware/software, appropriately equipped facilities, and adequate funding are all needed in any plan for successful technology infusion in the schools.

Method

The project was designed using the following phases: preservice teachers training workshop, and district students exposure program. The phase one entailed introducing 20 twenty program participants to the technology based training program developed to achieve the project goals and objectives. The technology based program entailed the following: Infusing Technology into the Classroom; Integrating Technology into English, reading, mathematics, science, and other core Curriculum; Introduction to Networking Systems (Windows NT & Novell NetWare*); Publishing an Interactive Multimedia Project; Image Creation; Word Processing, spreadsheet, & Database; Using Telecommunications tools in Education. After the preservice teachers had received instruction from the faculty involved in the project, they were asked to develop a multimedia project to represent their areas of specialties.

The final phase entailed the delivery of the technology based instruction in the classroom by the preservice teachers to students in the district schools. The preservice teachers utilized technological tools and materials which they were exposed to in delivery instruction in the following areas: English, math, science, geography, history, and arts. Periodically, participants

were supervised and evaluated by site coordinators assigned by the director of Center for Excellence in Education in the School of Education.

Equipment/Software used for the Project

The project facilitators and preservice teachers employed the use of the following equipment: Networked Multimedia Computers, Digital cameras, scanners, printers, QuickCam Technology, Infocus Video Projectors, Infocus LCD Panels, Overhead Projectors, Presenter Tview, Television Sets, Sony CD-Recorders, Personal Video Conferecing System, File/Video Servers. Hyperstudio, PowerPoint 7.0, Microsoft Works 4.0, Word Perfect, Student Writing Center, Microsoft Explorer, Microsoft Front Page, Windows NT, Novell NetWare, and Marcomedia Freehand were used by faculty and preservice teachers during the two week session. Finally, for transmission, ISDN/telephone lines, and T1 connections were used for equipment connectivity.

The research design employed in the study was descriptive in nature. Based on the review of literature, the researchers found no satisfactory instrument which met the requirements of this study. Therefore, a Likert Scale was developed to measure responses. According to Kerlinger (1973), developing a Likert Scale requires that numerous statements concerning the interest, attitudes, values or other personal characteristics are gathered. Statements developed representing relevant aspects of the variable to be measured were selected using expert judgment and testing with appropriate respondents. Five researchers determined whether a positive or negative response would be scaled higher. However, after the consideration of the aforementioned reasons, an evaluation instrument with twenty four questions was developed and administered to twenty project participants. The instrument addressed the importance of technology infusion in

course curriculum such as math, history, arts, English and geography.

Due to the research component included in the project, the following questions were examined: (a) does technology infusion play a significant role in developing quality instructional materials? (b) does technology infusion play a significant role in the academic performance of students? (c) does technology infusion play a significant role in the preparation of preservice teachers?

Results

In analyzing the preservice teachers' responses and the data of district school students academic performance, the analysis revealed that technology enhanced following:

- Increased interaction between students and preservice teachers.
- Increased academic performance of students and preservice teachers.
- Increased computing skills of students and preservice teachers.
- Increased motivation of students and preservice teachers.
- Encouraged rapid feedback between university faculty and preservice teachers.
- Encouraged rapid feedback between teachers and school district students.
- Increased students' interaction using the electronic mail enhance their writing skills.

In response to the three research questions, (a) does technology infusion play a significant role in developing quality instructional materials? Based on the data gathered, 95% of the preservice teachers agreed that technology infusion plays a significant role in developing quality instructional materials for school aged students and adults. (b) does technology infusion play a significant role in the academic performance of students? Based on the analysis, the academic

performance of preservice teachers and students increased by 75% in core academic subjects. (c) does technology infusion play a significant role in the preparation of preservice teachers? Based on the data analysis, 100% of the participants agreed that technology infusion plays a significant role in the preparation of preservice teachers.

Implications

The evaluation results of twenty respondents revealed positive perceptions of technology infusion core academic subjects. The study calls for further consideration that would allow the analysis of the perceptions of inservice and preservice teachers after the completion of similar technology training workshops. Consequently, it is evident that technology infusion as well as other technology application should be implemented in higher education and k-12 levels.

Equipment and software acquisition, faculty support, administrative involvement, and staff development are very important in the successful implementation technology infusion in the classroom. The research revealed that "Train-the-Trainer" model would be the best way to transfer technology from higher education to k-12 classrooms across the nation. In the State of the Union of January 23, 1996, President Clinton stated that he would ask the Congress to support the education technology initiative which calls for every classroom in America to be connected to the superhighway with computers, good software, and well-trained teachers. However, the success of the aforementioned initiative lies on the improvement of teacher education program across the nation.

References

Brunner, C. (1990). What it really means to "integrate" technology. Technology & Learning, pp. 35-36.

Kerlinger, F. N. (1973). Foundations of behavioral research. (2nd ed.). New York: Holt, Rinehart, 2 Winston, Inc.

Lockkard, J., Abrams, P. D., & Many, W. A. (1997). Microcomputers for the twenty-first century educators. An imprint of Addison Wesley Longman, Inc. 377.

Norris, C. (1994). Computing and the classroom: Teaching the at-risk student. The Computing Teacher. p 12-14.

Poirot, J. & Canales, J. (1993). Technology and the at-risk-an overview. The Computing Teacher. 25-55.

Poirot, J. & Robinson, G. (1994). Parent involvement and technology with at-risk students. 44-45.

Walker, D. F. (1983). Reflections on the educational potential and limitations of microcomputers. School and Society: Perspective for change agents. Phi Delta Kappan. p 244.

Dr. Mike I. Omoregie is the Director of Research and Coordinator of Educational Technology in the School of Education, Jackson State University, P O Box 17369, Jackson, MS 39217 Voice, Office 601 968-2243, Fax 601 968-2213 E-mail # omoregie@ccaix.jsums.edu

Dr. Betty Coleman is Associate Professor of Curriculum and Instruction in the School of Education, Jackson State University, P O Box 17369

Jackson, MS 39217 Voice, Office 601 968-2243, Fax 601 968-2213 E-mail

bcoleman@ccaix.jsums.edu